

## Tracking Migration: drivers, challenges and consequences of seasonal movements

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### European Turtle Doves migrating over sea and desert: links with population trends

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European Turtle Dove *Streptopelia turtur* is globally threatened because of its widespread declines on European breeding grounds in recent decades, albeit with some exceptions. The European population winters in the Sahel and migrates along three main flyways. Although the main cause of population decline is degradation of breeding habitat, aggravating factors could be conditions in the wintering grounds and hunting during migration (known to be unsustainable along the western flyway).

Hunting pressure varies spatially and is heaviest in south-central Spain. Previous tracking has shown that populations breeding in UK, western France and western Spain cross to Africa over Gibraltar, thus flying through the hunting hotspots, where hunting occurs during the peak of Turtle-dove migration. Spanish, British, French and Dutch populations have globally declined by at least 40% in recent decades; however, Turtle-dove numbers in Catalonia (NE Spain) appear to be stable.

On evidence that a single tracked Turtle-dove from southern France crossed over the western Mediterranean in a straight line to Algeria, we hypothesized that differences in population trends might be associated with different migration routes between Catalanian and central Iberian populations. Thus, in summer 2018 we tagged 11 breeding TDs with 4 gr Biotrack PinPoint GPS-Argos devices (7 in Catalonia; 4 in central Spain).

Our results show that Turtle-doves from central Spain followed the traditional inland route through Gibraltar to western Sahel. In contrast, Turtle-doves from Catalonia migrate along coastal eastern Spain, over the sea and into Algeria, wintering further east. Differences in conditions in wintering grounds or in hunting pressure between both routes may account for the different population trends. Our discovery can potentially have consequences for conservation policies in light of the International Species Action Plan recently approved for the species.